INDUSTRIAL DIAMOND ABSTRACTS

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APRIL

DIAMOND MINING AND INDUSTRY

Alluvial diamond production

S Africa, Dept Mines. *Diamond News* etc 1958 Vol 21 (4) pp 45-46 (Jan)

Rough and uncut diamond production in October 1957 :

Cape Province : 3,501.50 ct of total value £36,082 (206s 1d per ct). Private Estates : 444.50 ct of total value £7,479 (446s 6d per ct). Transvaal Province : 11,438 ct of total value £41,763 (73s 0d per ct). Thus total production amounted to : 15,384.50 ct of total value £87,324 (113s 6d per ct).

Production in November 1957 :

Cape Province : 7,620.25 ct of total value £70,990 (186s 4d per ct). Private Estates : 504.00 ct of total value £6,951 (275s 10d per ct). Thus total production amounted to : 8,124.25 ct of total value £77,941 (192s 2d per ct). *M* *C 1.21*

Air-operated ' cut-off ' lip loading box on the loco haulage at Premier (Transvaal) Diamond Mining Co, Ltd

D. Borchers. *Ass Mine Mgrs S Afr Circ* (Johannesburg) 1957 (8/57) 10 pp (Oct 15) ; *IMM Abstr* 1958 Vol 8 (2) p 104 (Jan)

This chute, modified for local conditions, is described under the following heads : general layout of mine, chute layout, detail of initial chute installation and operation, maintenance, modifications and alterations, comparative erection costs, and tonnage life and amortization cost. In conclusion the author emphasizes its efficiency as compared with any other type of loading chute. *X* *C 9.0*

Diamonds found in Sahara

Anon. *Diamond News* etc 1958 Vol 21 (4) p 23 (Jan)

French uranium prospectors have found six diamonds in the Hoggar area of the SE Sahara.
W *C 1.24*

LITERATURE REQUESTS
Please quote the page number of the journal which contains the original reference, and the author and title of the article, in all cases.

PHYSICAL, CHEMICAL, & MECHANICAL PROPERTIES OF DIAMOND AND OTHER HARD MATERIALS

Some properties of diamond

E. N. Bunting, A. Van Valkenburg (Nat Bur Standards, Washington). *Am Mineralogist* 1958 Vol 43 (1/2) pp 102-106 (Jan-Feb)

Measurements were made of the optical, electrical, and other physical properties of more than 1,100 gem diamonds. Infrared transmission tests showed that 74% of the diamonds were type I, with very high absorption in the 8-10 micron region ; 20% were type I, modified, with moderate to high absorption ; only 5% showed moderate to low absorption, and they were called type I, highly modified. Only 10 gems were ' pure ' type II. Spectrographic analysis indicated that differences in impurity content could not account for differences in absorption. The intensity and colour of fluorescence under ultraviolet light was observed, and the results are given.

Thermal and electrical properties are briefly dealt with. Graphs illustrate the infrared transmission in type I and type II diamonds, and a table shows the results of spectrographic analyses. 3 illustr, 12 ref, 1 table.
W *C 2.2 : C 2.25 : C 2.26 : C 2.28*

Surface microstructure of boules of artificial corundum

A. A. Gumilevskii. *Zapiski Vses Min Obsh* 1957 2nd Ser Pt 86 (6) pp 731-735 (Original in Russian)

10 illustr, 5 ref. *X* *C 2.5*

Corundum ' microlite ' and its structure

I. I. Kitaigorodskii. *Doklady Akad Nauk* 1953 Vol 90 (2) pp 225-226 ; *DSIR CTS No 399* 1958, 3 pp, (Feb) (Original in Russian)

Russian research on the subject is briefly reviewed, and the findings summarized. 7 ref.
W *C 2.7*

Electronic band structure of boron carbide

M. Yamazaki. *Journ Chem Phys* 1957 Vol 27 p 746 ; *Insdoc List* 1957 Vol 4 (24) col 1647 (Dec 16)

X *C 2.5*

CONTENTS

Diamond Mining and Industry	A53	Rock Drilling	A58
Physical, Chemical, and Mechanical Properties	A53	Grinding and Polishing of Hard Metals ...	A59
Diamond in Instruments, etc	A54	New Machining Methods	A60
Hardness and Wear Testing	A54	Powder Technology	A60
Truing of Grinding Wheels	A55	Diamond Tool Production	A61
Fine Boring and Fine Turning of Metals ...	A56	Surface Finish Testing	A61
Cutting and Machining of Glass	A57	Miscellaneous	A61
Machining of Stone, etc	A57	Publications Received	A61
Gem Polishing	A58	Patent Lists	A64

Microscopic and oscillographic investigation of the electro-luminescence of diamonds. Mikroskopische und oszillographische Untersuchungen der Elektrolumineszenz isolierende Diamanten

E. Krautz, G. Zollfrank. *Optik* 1957 Vol 14 (10) pp 446-457; *BSIRA Bull* 1957 Vol 12 (12) p 307 (Dec) (Original in German)

The electroluminescence of diamonds of the type I and IIa has been investigated at field strengths about 10^6V/cm by microphotographs. The distribution of electroluminescence inside a crystal is rather inhomogeneous, and shows remarkable differences in the arrangement of light patterns for different diamonds. Oscillograms of the brightness waves, voltage, and current show that not only electron impact processes are necessary for the electroluminescence, but also recombination processes of electrons and holes.

X *C 2.24*

The vibration spectrum of carborundum. Sur le spectre de vibration du carborundum

J. P. Mathieu, H. Poulet. *Comptes Rendus* 1957 Vol 244 (23) pp 2794-2796 (June) (In French)

8 ref. *H* *C 2.4*

Properties and uses of cobalt alloys

F. R. Morral. *Design News* 1957 Vol 12 (14) pp 112-114 (July 15)

Two tables list various alloys of cobalt and some of their properties and uses. 2 tables.

W *D 14.5*

The graphitisation of amorphous carbon. Sur la graphitisation des charbons amorphes

N. Platzer. *Comptes Rendus* 1957 Vol 244 (24) pp 2932-2935 (June 12) (In French)

The effect of high pressures on the low temperature preparation of carbon is studied, and the variation with crystal structure of some chemical and physical properties of non graphite carbons is examined. 10 ref.

H *C 2.6*

The structure of artificial graphites as revealed by x-ray, electron microscope and adsorption studies

L. G. Wilson, H. L. McDermot. *Can Journ Chem* 1957 Vol 35 (1) pp 15-20 (Jan)

The results obtained with the three techniques were in good agreement. The calculated surface areas vary from 18 to 385 m^2/g. 3 illustr, 7 ref, 3 tables.

H *C 2.6*

Measurements of the green diamond in Dresden. Messungen am gruenen Diamanten von Dresden

S. Roesch. *Fortschritte der Mineralogie* 1957 Vol 35 (1) p 13 (Aug) (In German)

Lecture to the 34th annl mtg of the German Mineralogical Society, Marburg, Sep 17-22, 1956.

The jewels in the Dresden collection include a pure white diamond of 17.55 carats, and a green diamond of 41 carats. Their precise shape and dimensions are given. *H* *C 2.7*

The diamond, king of jewels. Der Diamant, der Koenig der Edelsteine

K. Schlossmacher. *Dtsch Goldschmiede Ztg* 1958 Vol 56 (2) p 66 (Feb) (In German)

Its high refractive index makes diamond the most beautiful jewel, but only a very small percentage of stones is suitable for jewellery. Selection is a highly skilled and responsible job. The production of artificial diamonds is limited to industrials only, and it seems highly unlikely that it can ever be successfully extended to gemstones. *H* *C 1.61 : C 2.6*

DIAMOND AND OTHER HARD MATERIALS IN INSTRUMENTS, ETC

Jewel hydrodynamic bearings permit high speeds

MIT Instrumentation Lab, Cambridge, Mass. *Design News* 1957 Vol 12 (14) pp 38-39 (July 15)

The tungsten carbide gauge wire journal of a high-speed miniature gyro is supported at each end by sapphire sleeve bearings, and butts against highly polished diamond end-stones. A polyalkalene glycol lubricant reduces friction, and the life of the bearing is reported to be limitless. 4 illustr.

W *D 10.0*

[Diamond knife]

Anon. *Design News* 1957 Vol 12 (18) p 159 (Sep 15)

It is briefly stated that a diamond knife has made it possible for scientists to slice life into its thinnest part, *ie* 50-100 AU. *W* *C 3.26*

HARDNESS AND WEAR TESTING

Hardness changes during fatigue tests on copper

R. B. Davies, J. Y. Mann, D. S. Kemsley. *Inst Mech Engs Prep* 1956, 8 pp; *Index Aeronaut* 1957 Vol 13 (12) p 55 (Dec)

International Conference on Fatigue of Metals, 1956, Session 6, Paper 9.

Standard test specimens machined from a $\frac{1}{4}$ in. diameter extruded bar of refined electrolytic copper were polished, annealed, and subjected to rotating cantilever fatigue tests. Vickers diamond pyramid hardness tests were made prior to stressing, and at intervals during the test. Hardness increased to a maximum during the test, falling slightly prior to fracture. Hardness traverses on longitudinal sections of similar fractured specimens showed that hardness rose to a maximum, and then decreased in the vicinity of the fracture. The drop in hardness near the fracture is attributed to a recovery phenomenon after a 'saturation' hardness has been reached.

X *C 4.0 : C 4.32*

Improvement in the life time of tools due to partial hardening produced by electrical discharge. Standzeiterhoehung durch partielle Haertung mittels elektrischer Entladung

E. Hanke. *Fertigungstechnik* 1958 Vol 8 (2) pp 53-59 (Feb) (In German)

The hardening process of spark hardening carbide tools is described, and examined by Vickers hardness measurement. The variation of microhardness with depth and with temperature of anneal are given. 36 illustr, 10 ref. *H* *C 4.0*

Hardness correction for steel balls

G. A. Grassby (Bendix Prod Div). *Design News* 1957 Vol 12 (18) pp 146-147 (Sep 15)

A nomogram is described for use when using tables of correction factors for converting a spherical surface reading to the true hardness, where a particular combination of hardness and diameter is not listed. 1 illustr. *W* *C 4.0*

Metallographic utilization of hot hardness

J. Pomey, A. Royez, J. P. Georges. *C R Acad Sci* (Paris) 1957 Vol 245 p 1424; *Insdoc List* 1957 Vol 4 (24) col 1664 (Dec 16) (Original in French)

X *D 13.5*

Hardness tester

Newage Industries Inc, 222 York Rd, Jenkintown, Pa. *Design News* 1957 Vol 12 (13) p 102 (July 1)

A trade catalogue describes a new 30 oz hardness tester which is claimed to be suitable for use on any shape, size, or type of metal.

W *C 4.0*

Recent developments in hardness testing

A. E. Juve. *Rubber, Chem and Tech* 1957 Vol 30 pp 367-379 (Apr-June); *Battelle Techn Rev—Abstr* 1957 Vol 6 (12) p 869a (Dec) (No 18537)

X *C 4.0*

TRUING OF GRINDING WHEELS

Indexing holder increases diamond life

Universal Diamond Co Ltd, 15 Rodmarton Mews, Baker Street, London W 1. *Metalworking Prodn* 1958 Vol 102 (8) p 316 (Feb 21)

Unidex diamond dressers introduce an effective method of precisely positioning the tool in relation to the wheel to be dressed, and indexing the diamond in the tool.

A knurled nut controls the shorter portion of the dresser which holds the diamond; by loosening the nut, the diamond can be turned through 90°. Owing to the 10° inclination of the toolpost, a sharp corner of the flattened surface of the diamond is presented to the wheel. The process may be continued until the matrix is reached, when the tool should be reset. 6 illustr.

W *C 5.0*

Wheel dressing unit suits most grinding machines

Engg Diamonds Ltd, 26 Warwick Rd, Coventry. *Ind Equipt News* 1957 Vol 6 (17) p 1 (Sep)

The Endia precision dressing slide unit, model PDS 29, enables angular wheel dressing to be carried out on almost any kind of grinder. The dresser is lever operated and has a stroke of 2 in. Three diamond positions, 1 5/16 in. from the base, permit fresh cutting edges to be used. 1 illustr. *W* *C 5.0*

Grinding wheel dresser

Threadwell Tap & Die Co, Greenfield, Mass. *Design News* 1975 Vol 12 (13) p 112 (July 1)

Form T-244 illustrates and describes a direct-reading instrument designed to dress grinding wheels. A special section covers maintenance of the instrument.

W *C 5.0*

Tandem-type diamond tool dresses both sides and face

Tandemite, PO Box 4736, Cleveland 26, Ohio. *Am Machinist* 1958 Vol 102 (3) p 158 (Feb 10)

A special type of diamond tool is described which is used for dressing both sides and the face of abrasive wheels to an accurate 90° shoulder. The semi-circular tool carries a diamond cluster at one end, and a diamond impregnated pad at the other, so providing both a coarse and a fine dressing surface in one pass. This system is claimed to give perfectly formed wheels, with improved surface finishes for all ground parts. 1 illustr. *G* *C 5.0*

LITERATURE REQUESTS

Please quote the page number of the journal which contains the original reference, and the author and title of the article, in all cases.

Grinding process and finish with diamond trued grinding whee.s. Zerspanungsvorgaenge und Schleifergebnis beim Abrichten von Schleifscheiben mit Diamanten

K. E. Schwartz. *Ind-Anzeig* 1958 Vol 80 (11) pp 17-22 (Feb 7) (In German)

The cutting forces in wheel truing are resolved into two components, and measured in a specially designed apparatus. The wear on the diamond was measured, and the effect of the truing conditions on the final grinding was assessed in terms of the surface roughness of the finished product. Ceramically bonded carborundum wheels of various hardness and grain size were used.

In general, truing is carried out at low speeds and whole grains are torn out, whereas when diamond is used the grains are cut, and the effective wheel profile is formed accurately and smoothly. The shape of the truing diamond is compared with the profile of the wheel after each revolution at 5 micron feed.

The cutting forces on the diamond are of the order of 100 and 1,500 g, the ratio being of the order of 1 : 15. They depend on the shape of the diamond, a sharp diamond giving lower forces than a blunt one. The increase in force occurs in the very early stages of blunting. Fine grained wheels give higher forces than coarse ones, presumably because (*i*) more grains have to be notched in the former case, and (*ii*) coarse grains may contain internal flaws so that they are easier to fracture.

Wear on the diamond was measured by photographing and measuring the area of the diamond at fixed intervals, the diamond being rotated through 90° after every 6 revolutions. This wear is largely independent of the wheel hardness, but varies considerably with the initial hardness of the diamond, and the speed, feed, etc, of truing.

The finish obtained on the workpiece improves with continued grinding. The final roughness is largely independent of the depth of truing, but improves with increased speed of truing. Fine grained wheels must be trued with smaller feeds than coarse ones. Coarsely trued wheels have a longer life than finely trued ones, possibly because the area of grains exposed is already so large that only little further wear is required to make the effective grain area approximate to the total wheel area.

The grinding force depends particularly sensitively on the structure of the wheel, so that an increase in feed during truing from 0.05 mm/rev to 0.2 mm/rev reduced the force by 65%.

The influence of all these factors on the grinding cost is briefly discussed. In general (*a*) to remove chatter marks of the wheel, the feed during truing must be about twice as large as the amplitude of the marks, (*b*) to remove chips locked between grains or spot welded to them, dressing feeds of 0.1 to 0.2 mm/rev should be used, and (*iii*) when grains have broken out of the matrix, dressing must continue until these holes are of the same order of magnitude as the rest of the wheel. It is not necessary to continue dressing until the wheel is perfectly clean. 15 illustr, 10 ref.

H *C 5.0*

New types of tools at the 5th European Machine Tool Exhibition, Hanover. Neuere Werkzeuge auf der 5. EWA Hannover

D. Drukker & Zn NV. *Industrieblatt* 1958 Vol 58 (1) pp 27-29 (Jan) (In German)

A description of various special tools includes 'Diamine' dressing tools in which four diamonds are set in line, one behind the other, so that as the tool wears, the tip of the next diamond protrudes and can be used fully. No resetting, with the inherent loss of diamond, is necessary. *H* *C 5.0*

BP 780,090 **Cimatool Corp**
(Feb 4, 1954—conv date, USA)

Forming or dressing of grinding wheels

The truing diamond is traversed in forward and reverse directions along the axis of the grinding wheel, and repeatedly reciprocated towards and away from this axis by one of a pair of cams arranged in a truing unit having its own electro-hydraulic traverse and feeding drives, which, once set up, can be repeatedly applied to, and removed from, an existing machine without further adjustment. Provision is made for accurately compensating for lost motion by adding a measured amount of lost motion on reversal, and adjusting the timing between interconnected reversible actuating systems. Preferably only the movements of the truing diamond towards the grinding wheel axis are used for forming the wheel during each traverse along the wheel axis. This gives more positive control and a more efficient forming operation. (20 claims, 17 illustr).
J *C 5.01*

BP 780,444 **Sheffield Corp**
(Jan 29, 1954—conv date, USA)

Truing of grinding wheels

Part of the profile of a multiple ribbed grinding wheel is formed by a crushing operation, and part by a (diamond) cutting operation. The crest of the V-shaped profile formed by a diamond, together with the adjacent side portions, is more accurate, but heat is generated rapidly because of lack of voids in the surfaces. The root of the V-shaped profile, formed together with the adjacent side portions by crushing, is less accurate but cuts more freely, and less heat is generated because surface particles are cracked out of the grinding faces leaving voids. Then the cut rib surfaces will grind only the inner portions of the work where most rapid heat dissipation into the mass of the workpiece is possible, and the speed limiting disadvantage of a diamond trued surface is avoided. (10 claims, 5 illustr). *J* *C 5.01*

BP 789,728 **E. Wildhaber, Maag Gear-Wheel & Machine Co Ltd.**
(Nov 27, 1953—conv date, USA)

Truing device for a grinding machine

The line of grinding contact between the wheel and workpiece when grinding, *eg* the side surfaces of helical teeth or threads, is not contained in an axial plane but extends obliquely thereto, so that the shape of the tooth side produced depends on the wheel diameter as well as on the wheel profile. A truing device capable of gradually changing the wheel profile as its diameter decreases has a truing tool swinging about an axis which is inclined to the plane side face of the wheel; it is characterized by the arrangement of this axis at a certain angle to an axial plane of the grinding wheel extending through a mean point of the path of the tool. The support of the truing tool can be displaced parallel to this axis moving in the swinging direction, whereby the velocity of the swing is larger at the ends of the swinging path than in the middle portion. The device works with an end diamond and two side truing diamonds. A stationary cam adjustable about the axis of the swinging movement controls the movement, and small changes of the turning position of the cam result in small changes of the radii produced on the wheel profile. (13 claims, 9 illustr).
J *C 5.01*

DIAMOND TECHNOLOGY
First published 1942 as "Production Methods for Diamond and Gemstone." The second edition of this book by P. Grodzinski has been revised throughout and considerably enlarged. 840 pages, 486 illustrations, 94 tables, and indexes. From NAG Press Ltd, 226 Latymer Court, London W 6. 54s 6d, post free.

Swiss P 324,479 (Nov 29, 1954) **A. Charpilloz**

Method of making a profiled grinding wheel

Correct grinding of hard metal (Widia) milling cutters for making gear wheels is difficult and expensive when using ordinary grinding wheels. A grinding wheel for accurate profiling is obtained by first making a relatively soft metal blank of the desired profile, cut by a circular and accurately profiled disk cutter of a harder metal, the cutting edge of which is formed by the intersection of a cut-out with the circular periphery of the disk. The blank is then covered with a uniform layer of diamond dust, which is pressed into the soft metal by the same disk cutter utilized as a crushing roller, which results in the production of an abrasive wheel of exact profile. (1 claim, 4 illustr).
J *C 12.01*

DAS 1,016,175 (July 12, 1954) **E. Busch, Maschinenfabrik und Eisengiesserei A. Heinen GmbH**

Grinding device on tobacco cutting machines

The grinding wheel for sharpening all the circular knives of the rotary knife carrier is arranged coaxially with the carrier, and is axially movable in the opposite direction to the feed of the carrier in order to compensate for wear. The truing device is spring urged against a fixed stop for accurate adjustment of the grinding face, cutting edges, and truing diamond in the same plane, despite opposite movement of knife carrier and wheel. The diamond is eccentrically arranged on a shaft rotating in a circle which reaches beyond the grinding wheel periphery, so that the truing operation is effected intermittently. The wheel is composed of exchangeable grinding segments for better cooling. (8 claims, 5 illustr). Ref: 1 BP.
J *C 5.01*

DAS 1,017,047 **A. Mottu, Soc Genevoise d'Instruments de Physique**
(Nov 10, 1951—conv date, Switzerland)

Truing device for multiple profile grinding wheels, in particular for gear grinding wheels

A diamond for truing a profiled wheel is guided in such a manner that it cuts only when fed towards the centre of the wheel, and not when moving outwardly. In order to adapt this principle to the truing of multiple profile wheels, a diamond feeding gear is used with two meshing pinions, one of which is axially movable to bring one or the other of two cams into operation corresponding with the direction of feed of the work table. (2 claims, 7 illustr). *J* *C 5.01*

FINE BORING AND FINE TURNING OF METALS

Tool grinder is for service with carbide tipped tools

Thomas White & Sons Ltd, Laighpark, Paisley, Scotland. *Ind Equipt News* 1957 Vol 6 (21) p 12 (Nov)

The Kuhlmann type FSM/O is a bench model tool grinder with a built-in ½ hp motor. A swinging arm carries the grinding spindle and motor, and has precision slides, protected against dust, upon which the grinding table and cross-slide rest traverse. The machine uses a 7 in. diameter grinding wheel at a spindle speed of 3,000 rpm. Three-dimensional adjustment is provided for the toolholder and indexing head, and a radial feed permits original cutting angles to be maintained. Various attachments are available for use with the machine. *W* *C 12.2*

Fine boring machine can be set up in a few minutes

The Catmur Machine Tool Corp Ltd, 103 Lancaster Rd, Ladbroke Grove, London W 11. *Ind Equipt News* 1957 Vol 6 (21) p 13 (Nov)

The Larsson CL 19 Automatic S precision boring machine employs an exceptionally heavy spindle mounted directly in the non-adjustable spindle head. The smallest hole which can be bored is 0.59 in., and the largest is 1.77 in. 1 illustr.

W *C 6.0*

The cooling of cutting tools by liquids applied under pressure. Kuehlung von Schneidwerkzeugen durch unter Druck zugefuehrten Fluessigkeitsstrahl

S. S. Cetverikov, N. N. Zdrogov. *Vestn Masstro* 1957 Vol 37 (12) pp 71-75; *Inhaltsverzeichnisse sowjet Fachzeits* 1958 Vol 7 (1) pp 27-28 (Jan) (Original in Russian)

The effect of various coolants on the life, temperature, and cutting force of tools is examined. A method of applying the liquid at a pressure of 30 at is described. Variation in pressure alters the tool life. The quality of the product is improved and the costs are reduced.

H *C 12.0*

This thing called machinability. I, II

W. A. Nordhoff. *Western Machinery and Steel World* 1957 Vol 48 pp 73-76 (Aug); pp 98-101 (Sep); *Battelle Techn Rev—Abstr* 1957 Vol 6 (12) p 845a (Dec) (No 18217)

Latest data on machinability as affected by quality and nature of cutting tools, depth of cut and feed rate, spindle speed, and microstructure of the material. Power requirements for removing a certain amount of metal.

X *C 6.5*

Ceramic oxide machine tools. Oxydkeramische Werkzeuge fuer die spanende Fertigung

H. Opitz, H. Siebel. *Werkstattstechnik & Maschinenbau* 1958 Vol 48 (1) pp 2-6 (Jan) (In German)

The performance and wear of various ceramic oxide tools is compared with that of carbide tools. 12 illustr, 15 ref.

H *C 12.2*

Tools and clamping devices at the 5th European Machine Tool Exhibition. Werkzeuge und Spannzeuge auf der 5. Europaeischen Werkzeugmaschinen-Austellung

K. Schreyer. *Werkstattstechnik & Maschinenbau* 1958 Vol 48 (1) pp 7-16 (Jan) (In German)

Carbide and ceramic oxide tools and tool holders are described, together with tipped milling cutters and holders. 52 illustr.

H *C 12.2*

A carbide turning tool for multiple applications. Ein Hartmetalldrehmeissel fuer vielseitige Anwendung

H. Wagner. *Fertigungstechnik* 1958 Vol 8 (1) pp 38-40 (Jan) (In German)

A carbide tipped turning tool is described which can quickly and rigidly be clamped into tool holders for lathe tools, milling cutters, or boring tools. 8 illustr.

H *C 12.21*

Sharpening milling cutters with large angle of groove slope

A. D. Volkov. *Stanki i Instr* 1957 Vol 28 (12) pp 25-26 (Original in Russian)

3 illustr, 1 table.

X *C 12.21*

CUTTING AND MACHINING OF GLASS

Study of the 'abrasibility' of glass. II. Etude de 'l'abrasibilité' des verres. II

J. Gypser. *Silikattechnik* A 1957 Vol 8 (7) pp 244-266 (July); *Verres & Refract* 1957 Vol 11 (6) pp 412-413 (Nov-Dec) (Original in German)

The influence on glass polishing of the nature and temperature of the liquid used, and of the speed of the grinding wheel, is examined. Water is found to give better results than petroleum, xylol, or alcohol. Abrasiveness increases with increasing temperature. The depth of grinding varies with the peripheral speed of the wheel. A maximum depth is obtained at a particular speed which decreases with increasing temperature, and seems to depend largely on the viscosity of the glass. At a given speed and temperature, the depth of grinding on a given type of glass varies linearly with the pressure. 3 illustr.

H *C 7.23*

The inelastic behaviour of glass during shock. Le comportement anélastique du verre pendant un choc

Anon. *Verre et Refract* 1956 Vol 10 (4) pp 201-207; *Techn Wiss Ber Osram* 1957 Vol 30 (7/8) p 251 (Aug 15) (Original in French)

The energy lost in collision by a 3 mm diameter steel ball dropped on a glass surface is calculated from the measured height of rebound. Characteristic curves of energy lost in relation to temperature are obtained which give some information with regard to the structure of glass. A relationship between the elastic behaviour and viscosity is established.

H *C 2.22 : C 7.0*

Retaining ring holds interchangeable spindles in swivel head

MUM, Milan, Italy. *Design News* 1957 Vol 12 (14) pp 50-51 (July 15)

A simple retaining ring mechanism permits cutting, grinding, and drilling spindles to be held in the swivel head of a glass cutting machine. The mechanical arrangement and operation of the attachments is described. 4 illustr.

W *C 7.3*

The morphology of fractures in polished glass surfaces

Anon. *Glass Industry* 1957 Vol 38 (3) pp 135, 157 (Mar)

1 illustr.

H *C 2.22 : C 7.0*

BP 788,965 (Dec 6, 1955) **American Optical Co**

Glass cutting machines

Accurate location of the lens, and control of the path of the cutting tool, its pressure, and angle of tilt normal to the tangent at the point of contact with the curved lens surface, are obtained by the arrangement of a lens clamp arm to which the cutter is attached, and which is pivotally connected with a second shaft rotatable and slidable on the base. Depression of the clamp arm moves the cutter into operative position, while a cam on the rotary work table, co-operating with the second shaft, controls the path of the cutter. (11 claims, 10 illustr).

J *C 7.01*

MACHINING OF STONE, ETC

Drill is designed for masonry

Philplugs Product Ltd, 343 High Road, Wembley, Middx. *Ind Equipt News* 1957 Vol 6 (22) p 43 (Mid-Nov)

The Tuncarb drill has a tungsten carbide tip which is

secured to the twist shank by a special brazing process. They are suitable for drilling brickwork, stone, marble, and hand-glazed tiles. A resharpening service is provided by the manufacturers. 1 illustr.
W *C 8.2 : C 12.21*

The parting grinder Minosecar FR-Z. Trennschleifmaschine Minosecar FR-Z

Anon. *Feingeraetetechnik* 1958 Vol 7 (2) p 94 (Feb) (In German)

Rocks can be cut in any plane by a diamond boart parting wheel on the grinding machine developed by the VEB Rathenower Optische Werke, Rathenow, in collaboration with the Mineralogical Institute of the Bergakademie Freiberg. Details of the machine are given. 1 illustr. *H* *C 8.6*

Diamond tools for hard plastics. Diamantwerkzeuge fuer Hartplastikmaterialien

Dia-Chrome Co, Clendale, Calif. *Technica* 1958 Vol 7 (3) p 106 (Jan 31) (In German)

To obtain sharp smooth cuts on hard plastic materials, *eg* Polyester-fibre-glass compounds, loose, fine diamond powder is applied to metal tools. This increases working speed, while improving the precision and finish of the machined surface, and saving tool life. 3 illustr.
H *C 1.6*

GEM POLISHING

USA's diamond cutting industry yesterday and to-day

J. Solow (J. Solow & Son). *Diamond News*, etc 1958 Vol 21 (4) pp 20-21 (Jan)

A short review of objectives achieved by the UDMA in their 25 year history. *W* *C 1.5*

Diamond cutting

Anon. *Mineralogist* 1958 Vol 26 (2-3) p 60 (Feb-Mar)

A brief note advises home gem cutters to concentrate on gem materials which are generally available, and not to attempt diamond cutting.
W *D 2.0*

ROCK DRILLING

Carbide tools in coal mining. Hartmetallwerkzeuge fuer den Steinkohlenbergbau

K. Jaeger. *Bergbautechnik* 1958 Vol 8 (1) pp 24-27 (Jan) (In German)

The choice of the most suitable shape and type of material for carbide tipped mining tools is discussed, and the need for careful and early regrinding is emphasized. 8 illustr, 2 ref, 3 tables.
H *C 9.22*

Truco [diamond crowns]

Cie Joy, 30 Rue de Chabrol, Paris 10. *Rev Ind Minerale* 1957 Vol 39 (12) Insert (Dec) (In French)

(Advt). The company announce that they are now in a position to supply Truco diamond crowns of French manufacture. *H* *C 9.21*

Drilling rods of thin walled tubes. Bohrstangen aus duennwandigen Rohren

B. I. Shtrasgevm. *Gorn J* 1957 (2) pp 30-31 ; *Glueckauf* 1958 Vol 94 (5/6) p 214 (Feb 1) (Abstr in German)
H *C 9.0*

Recent findings on fragmentation in drill holes

H. Lueck. *Z Erzbergb Metallhuettenw* (Stuttgart) 1957 Vol 10 pp 391-396 (Aug) ; *IMM Abstr* 1958 Vol 8 (2) p 94 (Jan) (Original in German)

The author differentiates between 3 methods of investigating fragmentation in percussive drilling : (*i*) theoretical observations based on mathematical-physical principles, (*ii*) study of particle formation and particle size distribution in cuttings, (*iii*) determinations based on actual or model drilling experiments. The influence of percussion energy and efficiency, of the cutting angle, and of the design and measurements of the drill is discussed. *X* *C 9.0*

Extraordinary deviations in slanting drill holes in firm rock in Bulgarian prospecting. Aussergewoehnliche Abweichungen bei schraeg gerichteten Bohrungen in festem Gestein im bulgarischen Schuerfgebiet

F. Marinov. *Minno Qelo* 1956 Vol 11 (6) pp 75-83 ; *Glueckauf* 1957 Vol 93 (51/52) p 1662 (Dec 21) (Abstr in German)

The equipment and method of slant hole drilling in firm rocks is described, and measures for re-straightening highly deflected holes are indicated.
H *C 9.0*

Elaborate set-up in drilling a deep hole in the Sudbury Basin

J. M. McAndrew. *Canad Min Journ* 1957 Vol 78 pp 103-104 (July) ; *IMM Abstr* 1958 Vol 8 (2) p 95 (Jan)

The author describes the method of drilling a 6.008 ft hole in a part of the Sudbury Basin which is considered more difficult than average for drilling. The hole reached its target without the use of wedges, and with a deviation of only 5°. The author describes the rods and couplings, and the travelling sheave, and time studies made enabled comparison of 30, 40, and 50 ft pulls. *X* *C 9.0*

Methods for reducing the wear on rods, metals, and alloys in core drilling for geological investigations. Wege zur Verminderung des Verbrauchs an Rohren an Metall und Legierungen bei Kernbohrungen fuer geologische Untersuchungen

L. Gandev. *Minno Qelo* 1956 Vol 11 (5) pp 78-91 ; *Glueckauf* 1957 Vol 93 (51/52) p 1662 (Dec 21) (Abstr in German)

Methods are suggested for reducing the wear on rods by altering the connexions, and for saving carbide tips by altering their shape. Soviet machines are quoted as successful examples. *H* *C 9.0*

Diamond drill bits

H Wallace. *Canad Min Journ* 1957 Vol 78 (10) pp 87-88 (Oct)

Larger diamonds in drill bits, *eg* 25/carat instead of 100/carat, often lead to reduced drilling costs, particularly in reaming shoes and concave bits cutting through overburden. The speed and feed must be adjusted to the size of diamond, and in general smaller diamonds require higher speeds and higher water pressures. The procedure followed by the bit manufacturers in sorting and resetting diamond bits is described, and some hints are given for their use and care.
H *C 9.21*

Deep slant drilling and the control of the angle of drilling. Schliefgerichtete Tiefbohrung und Kontrolle des Winkels der Bohrrichtung

L. Aytay. *Bòny Lap* 1957 Vol 12 (10/11) pp 563-570 ; *Glueckauf* 1958 Vol 94 (3/4) p 144 (Jan 18) (Abstr in German)
H *C 9.0*

GRINDING AND POLISHING OF HARD METALS

How grinding affects fatigue strength

L. P. Tarasov (Norton Co). *Am Machinist* 1957 Vol 101 (27) pp 72-76 (Dec 30)

Recent studies of grinding and fatigue strength throw doubt on the established theories. A simplified version of a report to the American Society of Testing Materials is given. The research programme was under the joint auspices of the Mellon Inst of Industrial Research, the Grinding Wheel Inst, Norton Co, and the Battelle Memorial Inst. Wheel speed was held constant at 6,000 ft/min in the final grinding operation, table speed at 60 to 65 ft/min, and unit crossfeed at 0.050 in. after each table traverse. The bars were ground lengthwise to produce scratches parallel to the applied stress which did not affect fatigue strength. White, vitrified bonded friable aluminium oxide wheels were used. High compressive stresses were generated at the surface when grinding oils were used, peak tensile stresses ranging from negligible to moderate. With soluble oils, surface stresses were moderate tensile or moderate compressive, peak tensile stresses moderate to high. The lowest fatigue limit was associated with the highest peak tensile stress, but the other fatigue limits bear no obvious relationship to surface or peak stresses. If a surface is strengthened by shot peening, cold working, or nitriding, failures start below the surface. A change in grinding oil, even if it is of the same type, may change grinding conditions and affect residual stress pattern and fatigue limit. 4 illustr, 8 ref, 1 table.

R *C 4.0 : C 5.0*

Uniform grinding action as the wheel wears down

D. Ward. *Grinding & Finishing* 1957 Vol 2 (7) pp 25-28 (Dec)

The article discusses grinding wheels which are variously called 'variable density', 'progressive density', 'graduated density', or 'tapered structure' wheels. In manufacturing the wheels, the levelling blade is tilted, leaving a greater amount of material near the hole which remains when pressure is applied from both sides with a straight plate, leaving less material near the OD. The wheels are effective on snagging and rough or finish grinding. Surface grinding with wheels of 16 in. diameter or more is one of the most common applications. 5 illustr.

R *D 8.0*

Form ground in 20 hours

W. J. Knuff (Cleveland Grinding Machine Co). *Grinding & Finishing* 1957 Vol 2 (7) pp 35-37 (Dec)

The punch and die sections for a venetian blind ratchet were finish ground in 20½ hr (against a previous 60-70 hr) by semi-skilled operators, by applying the principles of optical projection grinding. The sections were made from Vega die steel and heat treated to RC 62. Tolerances of 0.0001 in. were obtained by grinding to a comparator screen without intermediate checking. No stoning or lapping was required. The grinding wheel was dressed with a convex radius smaller than the smallest radius on any part of the punch or die sections. Two die sections are illustrated, set up on the magnetic chuck of the Visual Grind, an optical projection grinder made by Cleveland Grinding Machine Co. 4 illustr.

R *C 5.0*

Thoughts about efficient grinding. Einige Gedanken ueber fachgerechtes Schleifen

Anon. *Technica* 1958 Vol 7 (4) pp 159-161 (Feb 14) (In German)

7 illustr. *H* *C 5.0*

Simplified gun drill sharpening cuts production delays

F. Bloch (Eldorado Tool & Mfg Corp). *Am Machinist* 1957 Vol 101 (27) pp 78-80 (Dec 30)

Sharpening is effected by grinding 2 cutting angles with primary clearances, with secondary clearances of the outside angle to avoid heeling, and a setback to permit cutting oil to flow back into the flute and push out chips. There are no back, side, or negative rakes, chipbreaker, or chip separator. An illustration shows a sharpening fixture used with a peripheral grinding wheel which permits easier diamond wheel truing, and which is smoother in use. Another homemade fixture uses a face wheel. For either setup, the wheel should be 180 to 320 mesh diamond. Both fixtures consist of a V-block with a locator stop to level the flat. The V-block rests on a riser block with the proper primary clearance angle. When the block is rocked, the drill tip is wiped across the wheel face for a better finish. The assembly pivots sideways to produce the cutting angles. The fixture is simple and inexpensive to make. Gundrills may be sharpened until there is practically no carbide left, or, in the case of inserted carbide tips, until the radius in the back of the cutter meets the tool centreline. 8 illustr.

R *C 12.21*

Better reinforced cut-off wheels

H. N. Stone (Bay State Abrasive Prod Co). *Grinding & Finishing* 1957 Vol 2 (7) pp 21-24 (Dec)

Recent research indicates that the life of cut-off wheels may be prolonged by an average of 33% by careful matching of components, and improvements in the manufacturing process. Small differences in wheel composition may result in wide differences in wheel performance. A cut-off wheel must incorporate the strength and safety provided by reinforcement, and still cut freely. The stresses to which abrasive grains are exposed, particularly in foundry work, are discussed, as well as the different kinds of wear (fragmentation and erosive). A balance in the wear rates of the various components may be built into the wheel. Also, the bond elements may be carefully selected to produce, as they decompose, materials which prevent undesirable interaction between the abrasive and the metal being cut. 4 illustr, 2 tables.

R *D 8.0*

Grinders are of 'streamlined' construction

Denford Small Tools (Brighouse) Ltd, Victoria Works, Birds Royd, Brighouse, Yorks. *Ind Equipt News* 1957 Vol 6 (22) p 48 (Mid-Nov)

A cabinet model grinding machine, and a pedestal type grinding and polishing machine are described. The grinder has 16 in. centres and takes wheels of 12 × 1¼ × ¼ in. hole; a 1½ hp motor provides a spindle speed of 1,500 rev/min. The centres of the grinding and polishing machine are 11½ in., and wheel size is 10 × 1 × ¼ in. It is powered by a ¼ hp motor. 2 illustr.

W *C 12.3 : C 13.0*

Surface grinders have special features

Elgar Machine Tool Co, Hanworth, Feltham, Middx. *Ind Equipt News* 1957 Vol 6 (15) p 11 (Aug)

Three versions of the Giustina model R 900 surface grinder are available; vertical spindles and rotary magnetic chucks are common to all models. Manual and automatic wheel feed is available, and wheel dressing can be performed without interrupting the grinding process. Special features of all three machines are described. 1 illustr.

W *C 12.0*

Modern parting methods. Moderne Trennverfahren

O. Hake. *Ind Anzeig* 1958 Vol 80 (11) pp 151-160 (Feb 7) (In German)

Includes a consideration of parting by grinding. 34 illustr, 14 ref.

H *C 5.0*

Grinding machine increase life of twist drills

Ludwig Gack, Muhlacker, Wurttemberg, Germany. *Ind Equipt News* 1957 Vol 6 (22) p 63 (Mid-Nov)

The twist drill grinder provides point and lip relief scales of 90-140° and 6-8° respectively. Four models are available: SS25V is a grinding attachment for mounting on existing equipment with wheels up to 8 in. diameter; SS25M is a complete grinding machine, including motor and twist drill grinding device; SS25MF is a pedestal version of SS25M; SS25MFO is a complete pedestal mounted grinder with an oscillating grinding wheel. A diamond dresser can be supplied at an additional cost. 1 illustr.

W *C 12.3*

Grinding machine is designed for production of tools with carbide tips

Tornos Sales Co, 402 Broadgate House, Coventry. *Ind Equipt News* 1957 Vol 6 (22) p 37 (Mid-Nov)

The Agathon 125S grinding and lapping machine is designed for repetition work, for grinding chipbreakers, and for hard metal tool grinding generally. The machine can be fitted with a variety of wheels, including combined grinding and lapping wheels, up to a diameter of 125 mm. Tools with a body height up to 75 mm can be accommodated. The table travel of 100 mm longitudinally, and the 60 mm cross traverse, work in play-free guideways. Spindle speed is 3,600 rev/min in both forward and reverse directions. The remote-controlled workhead can be adjusted in increments of 0.002 mm. The tool adjustment device ensures correct angular positioning, and the angular support is adjustable in any direction. 2 illustr.

W *C 12.21*

Automatic centreless grinding

Anon. *Edgar Allen News* 1957 Vol 36 (422) pp 180-181 (Aug)

Automatic centreless grinding as applied to the production of countersunk screw blanks is described. The machine is fully automatic and works at the rate of 600 pieces per hour. By the use of appropriately formed wheels, both shank and countersink are ground simultaneously. 4 illustr. *G* *C 5.0*

Introduction to the technology of grinding. Einfuehrung in die Schleiftechnik

Anon. *NOVA* 1958 Vol 2 p 2 (Feb) (In German)

Book, Fachbuchverlag, Leipzig, 388 pp, illustr. Price DM 12.00

A survey of the whole field including some related techniques such as electro-erosion and ultrasonic drilling. *H* *C 12.9*

Surface grinding machine has 6 in. by 18 in. table

Harbots Ltd, Devonshire Rd, Leics. *Ind Equipt News* 1957 Vol 6 (15) p 35 (Aug)

The Harbot 618 surface grinder is available for wet or dry grinding, or both. Manually or hydraulically operated models are offered, and they are claimed to be suitable for precision form grinding of all kinds: surface areas up to 10 × 18 in. can be ground. The interchangeable wheelhead is easily detachable. 1 illustr. *W* *C 12.3*

Interferometric examination of polished metal surfaces. Interferenzmikroskopische Untersuchung an glaenzenden Metalloberflaechen

E. Raub. *Werkstattstechnik & Maschinenbau* 1958 Vol 48 (1) pp 37-40 (Jan) (In German)

The interference patterns obtained with different degrees of mechanical and chemical polish are described. 12 illustr. *H* *C 12.61*

Grinding machine has special features

Rockwell Machine Tool Co Ltd, Welsh Harp, Edgware Road, London NW 2. *Ind Equipt News* 1957 Vol 6 (21) p 55 (Nov)

The Jung internal grinding machine, model CM 8, features automatic loading of workpieces. Grinding, dressing, wheel infeed, and loading and chucking movements are hydraulically controlled. The cycle is controlled by measuring equipment in the form of a plug gauge, *ie* Gaugematic, or by a diamond setting, *ie* Sizematic. Bores from 7/32 to 1¼ in. diameter, and up to 3¼ in. long, can be accommodated. 1 illustr.

W *C 5.0*

Electrolytic polisher prepares metallographic specimens for examination

Shandon Sci Co Ltd, 6 Cromwell Place, London SW 7. *Ind Equipt News* 1957 Vol 6 (22) p 15 (Mid-Nov)

The Shandon Electropolisher is described, and it is claimed that it can be operated by unskilled personnel. 1 illustr. *W* *C 12.23*

Grinding machines are quick and accurate

G. Zwicky (London) Ltd, 193 Victoria Street, London SW 1. *Ind Equipt News* 1957 Vol 6 (22) p 6 (Mid-Nov)

The Christen 2-32 machine is suitable for four-face or taper grinding of twist drills and pointed drills. The machine can be used for left and right-hand drills of any length. The 01-2 small precision drill grinder possesses micrometric adjustment of the grinding wheel, and a powerful magnifying glass to aid setting of the drill. 2 illustr. *W* *C 5.0*

NEW MACHINING METHODS

Electro erosive unit replaces diamond grinding

TOS, Varnsdorf, Czechoslovakia. *Design News* 1957 Vol 12 (15) p 17 (Aug 1)

The BJS 18 electro-erosion unit, designed for sharpening carbide-tipped cutting tools, removes material with rectified DC pulses of high current density. The machine can be used for coarse or fine grinding, and with two slides and two grinding wheels mounted on a common spindle it can also be used for profile grinding. Cutting edges up to 1 3/5 × 1 3/5 in. can be sharpened. 1 illustr. *W* *C 12.9*

POWDER TECHNOLOGY

The rate of fall of irregularly shaped dust particles. Fallgeschwindigkeit von unregelmaessig geformten Staubkoernern

W. Peters, G. Schmeling. *Gesammelte Ber Betr Forsch Ruhrgas AG* 1956 (6) pp 55-58; *Staub* 1958 Vol 18 (2) pp 54-55 (Feb) (In German)

H *D 7.0*

LITERATURE REQUESTS

Please quote the page number of the journal which contains the original reference, and the author and title of the article, in all cases.

DIAMOND TOOL PRODUCTION AND DIAMOND RECOVERY

Coolant separator removes sludge centrifugally
Turbo-Separator AG, Wattwil SG, Switzerland. *Ind Equipt News* 1957 Vol 6 (21) p 23 (Nov)

The Turbo centrifugal coolant cleaner is available in two models, both of which have a capacity of 33 gall/min. Contaminated fluid flows from the machine tool into the base of the turbo, and a revolving suction member lifts it to the main drum. Separation takes place, and the cleaned coolant is returned, under pressure, to the machine. In the main bowl centrifugal force causes the sludge to adhere to the walls; this can be precipitated into the basin by braking the rotating body through a control switch in the turbo housing. The solids can be recovered from the basin when convenient. 1 illustr.
W *C 1.31 : C 6.0*

SURFACE FINISH TESTING

The measurement of surface roughness. Metrologie des états de surface
Anon. *Machine Mod* 1958 Vol 52 (587) pp 7-8 (Feb) (In French)

The article on roughness standards by the Abbot Cayère (*Machine Mod* 1958 (587) pp 9-15 (Feb)—*see below*) is critically discussed. Absolute roughness standards are difficult to obtain, and samples serving to compare the surfaces obtained by various machining methods are adequate for most purposes.
H *D 15.4*

Roughness standards. Etalons de rugosite
Abbé Cayère. *Machine Mod* 1958 Vol 52 (587) pp 9-15 (Feb) (In French)

Two firms have brought out their own roughness standards covering a range down to 3 microns. Samples, neatly arranged in boxes, represent various machining operations and the resulting roughness as measured on a pneumatic tester [described in *Machine Mod* 1957 pp 25-26 (Nov)], together with the symbols used on the engineering drawing. The type of surface profile obtained by the various machining processes is analyzed, and the results are discussed. 9 illustr.
H *D 15.4*

MISCELLANEOUS

Tools
Armstrong Bros Tool Co, 5200 W Armstrong Ave, Chicago 30, Ill. *Design News* 1957 Vol 12 (13) p 102 (July 1)

A 120-page catalogue gives detailed information on 4,980 tools, including cutting tools.
W *C 6.0*

Control unit will govern cutting machine speed
Brit Oxygen Gases Ltd, Bridgewater House, Cleveland Row, London SW 1. *Ind Equipt News* 1957 Vol 6 (14) p 18 (Mid-July)

Thirty-six in. universal cutting machines are now available with an electronic unit which governs the cutting speed. Thyratron control ensures that the unit maintains the drive motor at a constant speed, irrespective of changes in mechanical load or mains voltage fluctuations. 1 illustr.
W *C 12.0*

Measuring on the machine. Das Messen in der Maschine
A. Forster. *Ind Anzeig* 1958 Vol 80 (16/17) pp 221-225 (Feb 26) (In German)

Lecture to the 1957 meeting on automation, Stuttgart. Automation relies on accurate measurement during grinding. Very precise measurements at a single point are taken by means of a diamond edge applied and retracted electro-magnetically. A pneumatic recorder takes readings to an accuracy of a fraction of a micron. The application of this and similar instruments to circular and surface grinders is described. 20 illustr.
H *D 15.0*

Automatic control of machine tools. Messteuerungen an spanabhebenden Werkzeugmaschinen
K. Haeuser. *Industriekurier* 1958 Vol 11 (6) pp 59-60 (Feb 19) (In German)

Methods of controlling machines from the dimensions of the workpiece are described. The machines considered are centreless circular grinders, surface grinders, internal honing machines, jig drilling machines, and copying and automatic lathes. 7 illustr.
H *C 5.3 : C 6.3 : C 12.3 : C 13.4*

Control of small dimensions
M. K. Kovalev & coll. *Stanki i Instr* 1957 Vol 28 (12) pp 27-28 (Original in Russian)

3 illustr. *X* *D 15.0*

Saw sharpener is fully automatic
Wadkin Ltd, Green Lane Works, Leics. *Ind Equipt News* 1957 Vol 6 (14) p 2 (Mid-July)

The Loroch type HF saw sharpener grinds round the periphery of a circular saw in one continuous operation, at a rate of 35-70 teeth/min, the complete profile of each tooth being followed automatically. The grinding wheel is provided with a swivelling movement for grinding alternate face bevels. All working parts are enclosed, and the sharpener possesses a built-in dust extractor. 1 illustr. *W* *C 12.21*

PUBLICATIONS RECEIVED

BOOK REVIEW

Yearbook of grinding and polishing technology, 1958. Jahrbuch der Schleif- und Poliertechnik 1958
B. Kleinschmidt. Vulkan-Verlag Dr W. Classen, Essen. 488 pp, illustr, tables, 1958. Price DM 14.00

This useful book is designed as a source of practical information on all aspects of grinding and polishing. It is divided into four sections: (*i*) grinding materials, (*ii*) methods and applications, (*iii*) machines and tools, and (*iv*) general information.

The first section contains two short articles dealing with diamond wheels, and the best use of diamond powder. The second section includes an article on glass grinding in which corundum wheels only are mentioned, and no reference is made to the use of diamond. In the third section a hardness tester for grinding wheels is described, but no reference is made to dressing and truing of grinding wheels. The fourth section consists mainly of useful tables, lists of trade names, etc.

The book is abundantly illustrated, but its usefulness is slightly marred by the absence of an index.
H *C 1.51 : C 4.0 : C 5.0 : C 7.23 : D 8.0*

TRADE LITERATURE

The Junior BCA jig boring machine

R. E. Godfrey Ltd, 7a London Road, Redhill, Surrey. 4 pp, 8¼ × 10½ in., illustr

The Junior machine is intended for light jig boring, milling, and drilling, where simplicity of setting and operation are a primary consideration. A swivelling head, compound slides and scales, and a rotary table permit many combinations of straight, angular, and radial operations to be performed with a minimum of preparation and ancillary equipment. The catalogue includes a price list and shipping specifications.

W *C 6.3*

Hoglund contour wheel dressers

Hoglund Engineering and Manufacturing Co Inc, 343 Snyder Avenue, Berkeley Heights, NJ. 6 pp folder, 8½ × 11 in., illustr

The inclined plane mechanism in Hoglund wheel truers is illustrated and described. It is claimed that the absence of linkages and mechanical complications in the control mechanism of the diamond obviates excessive error, wear, or malfunction. A microscope fixture is available with each Hoglund truer which facilitates precise diamond setting with a minimum of skill. The 40 × magnification and the scribed reticle give an accuracy of 0.0001 in., and diamond wear is clearly visible. *W* *C 5.0*

Industrial diamond cutting tools

American Machinery Co, Olivine St, Willimansett, Mass. 4 pp, 8½ × 11 in., illustr

A comprehensive brochure is divided into five principal sections, *ie* (*i*) single stone wheel dressers, (*ii*) diamonds for gear grinding and thread grinding, (*iii*) boring tools, gauge points, and chisel edges, (*iv*) multiple-set and cluster type dressers, and (*v*) diamond powder and lapping compounds. Six hints on the care of diamond tools are given, and a guide to the selection of diamonds is provided.

W *C 1.6 : C 5.0 : C 6.0 : D 7.0*

Sales bulletin : grinding machines

Coventry Gauge & Tool Co Ltd, PO Box 39, Fletchamstead, Coventry. 4 pp, 8¼ × 10½ in., illustr

Machines for worm grinding, thread grinding, gear grinding, cylindrical grinding, and jig boring are described. Specifications are provided, and several of the machines are illustrated.

W *C 5.3 : C 12.3*

How to regrind your cross-bits : Sandvik Coromant 770, 773, 776, 777

The Sandvik Steel Works, Sandviken, Sweden. 8 pp, 8½ × 11¾ in., illustr

The catalogue details procedures for regrinding some of the Sandvik Coromant range of tungsten carbide drilling bits. A table indicates the correct wheel size for use with various sizes of bit.

W *C 9.22*

New flat lapping innovation : Gyro-Matic '24' lapping machine

Spitfire Tool and Machine Co, Chicago 41, Ill. 4 pp, 8½ × 11 in., illustr

The Gyro-Matic 24 is claimed to produce parts within an accuracy of less than 1 light band. The retainer rings exercise a constant truing action on the lapping plate, thus maintaining an accurate lapping surface. A metering disk provides four different apertures through which the abrasive can flow.

W *C 13.2*

Collected catalogues [McDonough Sterling bench model 'DB' drill grinder]

McDonough Manufacturing Co, Eau Claire, Wisc.

The model is equipped with a 6 in. diameter × 1¼ × 1/2 in. hole diamond cup wheel, with a 4 × 1 in. recess on one side. A dressing attachment is permanently mounted, and one mounted diamond dresser is provided. The overall height of the machine is 19 in., and it requires a bench space of 14 × 19 in. Drills of ¼ to 2½ in. can be ground; standard lip angle is 59°; 2, 3, or 4 lip drills can be ground without chucks or collets. The 1/2 hp single phase motor gives 3,450 rev/min, and operates on 115/230 V.

W *C 5.0*

Collected catalogues [McDonough Sterling model 'DA' drill and carbide tool grinder]

McDonough Manufacturing Co, Eau Claire, Wisc.

Similar in many respects to the DB model, the DA grinder is a floor model which requires a floorspace of 24 × 48 in. The diamond wheel is of the type supplied with the DB, and two dressing positions are allowed for the mounted diamond dresser which is provided. Two 6 in. silicon carbide cup wheels are provided for use with carbide tipped tools: one for roughing and one for finishing. The 5 × 9 in. table has lateral and tilting adjustment for grinding any shape of tip or tool. A choice of 3 phase or single phase motor is available.

W *C 5.0 : C 12.21 : C 12.3*

Collected catalogues [McDonough Sterling model 'DV' variable angle drill grinder]

McDonough Manufacturing Co, Eau Claire, Wisc.

This model grinds 90 to 140° included angles on 2, 3, or 4 lip drills, from ¼ to 2½ in. diameter. The grinding wheel is a 6 in. diameter × 1¼ × ¼ in. hole cup wheel, with a 4 × 1 in. recess on one side. The 1/2 hp motor operates at 3,450 rev/min on 115/230 V; it is totally enclosed and fan cooled. Its structure is similar to that of the DA model. *W* *C 5.0*

Power down-feed for Herbert vertical miller

Alfred Herbert Ltd, PO Box 30, Edgwick Works, Coventry

The Herbert 47V vertical milling machine is widely used for light precision operations, and for heavy cutting with carbide on materials ranging from aluminium to HSS.

An automatic power down-feed unit, for attachment to this machine, permits any combination of holes in the vertical plane, and at five levels, to be drilled and accurately bored at the setting used for milling operations. The indexing barrel has five adjustable screw stops, and is used to trip the down-feed of the spindle. Three rates of down-feed are provided: 88, 165, and 330 cuts/in. A large micrometer, set to zero at the commencement of the cut, registers the depth of hole drilled or bored. *W* *C 6.3*

Ceewrite indicator for lathe work

Alfred Herbert Ltd, PO Box 30, Edgwick Works, Coventry

Use of the Ceewrite indicator is claimed to eliminate the use of depth micrometers, slip gauges, and standard or Vernier micrometers. Operating procedure is simple: the indicator is normally mounted on the saddle so that it will work on the leadscrew; the lathe tool is applied to the workpiece and a facing cut taken; indicator dials are set at zero, allowing longitudinal tool movement to be read directly from the dials. The dials can be reset at zero if required. Eight models of the Ceewrite are available, with dials graduated in decimals or fractions, and with various settings.

W *C 6.3 : D 15.8*

Wimet cutting grades & machining data : January 1958
Wickman Ltd, Wimet Div, Torrington Avenue, Coventry. 8 pp, 7 × 9 in., illustr

Wimet sintered carbides, *ie* tungsten carbide and tungsten titanium, are described, and crater resistance, wear resistance, and shock resistance of the different grades are compared on a chart. The tungsten carbide tools can be identified by their colour which denotes the application for which the tool is intended. Terms used in the description of cutting processes are illustrated and described. Speeds, feeds, and rakes are recommended for use when machining steels, iron, and non-ferrous materials. *W C 12.2*

Williams Roto Recipro toolmaking machine
Connecticut Tool & Engineering Co, Round Hill Road, Fairfield, Conn. 8 pp, 8½ × 11 in., illustr

The Roto Recipro machine is capable of producing extrusion dies, drawing dies, blanking dies, etc, machining tungsten carbides, duplicating machine templates, and many other uses. Its most important feature is its ability to machine intricate carbide contours using inexpensive diamond Roto Recipro tools, or diamond Recipro shape tools.

Many operations are described in detail, and a special section is devoted to the miscellaneous applications of the diamond tools. The tools were developed by the Connecticut Tool & Engineering Co, and are manufactured by the American Co!dset Corp. An electrolytic metal bond is employed for securing the diamond particles to the steel mandrels. When used in conjunction with the Roto Recipro machine, the diamond tools provide a valuable economy.
W C 11.22 : C 12.0

CORRIGENDA

See *Ind Diamond Abstr* 1958 Vol 15 p A10 (Jan)
Die refining with boron carbide abrasive :
For '*Wire Industry*' read '*Wire & Wire Products*'

See *Ind Diamond Abstr* 1958 Vol 15 p A51 (Mar)
Patent Lists—German :
For '1,023,359' read '1,023,358'

PATENT LISTS

BRITISH

The Official Journal (Patents) 1958 (3603) (Mar 5)

794,127 ULVSUNDA VERKSTADER AB. Grinding machines.

794,364 MODLER, J. (trading as ASCHAFFENBURGER MASCHINENFABRIK J. MODLER). Centreless grinding apparatus.

794,212 SANDVIKENS JERNVERKS AB. Cutting tools.

The Official Journal (Patents) 1958 (3606) (Mar 26)

795,328 STARDRILL-KEYSTONE CO. Machine for dressing tools such as dril'ing bits.

UNITED STATES

Official Gazette 1958 Vol 727 (1-4) (Feb)

2,821,815 G. BANKO. Auxiliary compound angle grinder for surface grinding machines.

2,821,817 W. ZALEWSKI. Grinding machines.

2,821,818 H. E. McGEE, W. S. SWANSON, CRANE PACKING CO. Lapping machine and automatic feed mechanism therefor.

2,821,819 R. W. BERNSTEIN, A. BLOCK, MERIT PRODUCTS INC. Sectional abrasive drum.

2,821,974 J. KISH, F. BRANCATO, EX-CELL-O CORP. Grinding wheel dresser.

2,822,038 A. F. BEAUMONT, A. WYSOVZANSKI, UNITED STATES OF AMERICA. Electric belt link hardness inspection machine.

2,822,254 G. J. GOEPPERT, C. V DOENHOFF, CARBORUNDUM CO. Nitrile rubber bonded abrasive modified by a diketone.

2,822,255 C. A. REDFARN. Manufacture of abrasive articles.

2,822,647 N. N. RIPS, I. RIPS, YOUNGER MANUFACTURING CO. Method and apparatus for forming bifocal lenses.

2,822,648 L. H. METZGER, V. J. FANTOZZI, SUPER-CUT INC. Rotary tool mounting and method of assembling the same.

2,822,686 H. V. HUSE, HYDRAULIC A/S. Pressure control for hydraulic systems.

2,822,687 L. G. FREEDY, VANANT CO INC. Drop testing machine.

2,822,797 O. C. PALMER. Tool for use in horizontal and vertical grinding wheel dressing.

2,823,448 W. KRUMME, W. F. KLINGELNBERG SOEHNE. Gear generating apparatus.

2,823,492 R. M. ARBUCKLE, J. R. HAMILTON, GENERAL MOTORS CORP. Grinding machine and method.

2,823,496 O. W. WINTER. Grinding devices.

2,824,412 J. W. PARKER. Internal grinding machine.

2,824,556 W. H. BATEMAN, WICKMAN LTD. Method and means for shaping and trimming helically formed grinding wheels.

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Complete Specifications Accepted

2701 R. M. F. SEAWRIGHT. Rock drills.

2962 A. STIHL. Grinding tooth for saw chain of motor chain saws for rock working.

2999 I. F. CANNATA. Method and means for dressing and polishing stone and the like.

Extracts of Complete Specifications

2789/57 F. V. ATKESON, PITTSBURGH PLATE GLASS CO. Method and apparatus for cutting glass sheets.

2790/57 R. A. CRESSWELL, J. R. BRADSHAW, AFRICAN OXYGEN LTD, BRITISH OXYGEN CO LTD. Apparatus for electric arc erosion.

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211,705 COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION. Metal cutting tool.

SWISS

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327,034 CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE. Device for spark machining.

327,395 FENLIND ENGINEERING CO. Method of precision grinding of hard metal tools, and machine for carrying out the method.

327,397 A. L. BALL, O. S. BUCKNER, P. C. TUCKER, BAY STATE ABRASIVE PRODUCTS CO. Flexible abrasive means.

FRENCH

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1,158,795 T. HORIE. Method of making abrasive materials.

1,158,841 C. B. PORTERFIELD, E. M. WILLIAMS, FIRTH STERLING INC. Method and apparatus for spark machining.

1,159,475 A. J. JONES, LANDIS TOOL CO. Feed and compensation mechanism.

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Applications Open to Public Inspection

1,025,171 A. GOSSMANN, OTTO WOLPERT-WERKE GmbH. Hardness tester working according to the depth differences measuring method and automatically controlling the testing operation.

1,025,172 G. VON ROSENBERG, H. WEINHART, FARBWERKE HOECHST AG *vormals* MEISTER LUCIUS & BRUENING. Method and device for determining the mechanical wear resistance of thin covering layers.

1,025,360 B. PETUCH. Method for the continuous recovery of cores and rock samples, and for the simultaneous flushing when turbo-drilling, and device for carrying out the method.

1,025,587 M. MUELLER. Device for cutting glass plates.

1,025,635 J. PERTHEN, H. -K. STEUDEL. Rapid surface profile recorder.

1,025,751 J. M. HALDEMAN, S. R. SQUIBB, D. A. URQUHART, GENERAL MOTORS CORP. Device for grinding piston rings.

1,025,753 K. KLINGSPOR. Device for making abrasives or anti-skid materials.

1,025,807 B. A. GRAEFER, H. NUESSE, A. PILGRIM, MASCHINENFABRIK NUESSE & GRAEFER KG. Rotary rock drilling machine.

1,026,190 KLOECKNER-HUMBOLDT-DEUTZ AG. Device for finishing bores.

1,026,191 L. OELMEIER. Lapping machine.

1,026,595 F. HURTH, CARL HURTH MASCHINEN & ZAHNRADFABRIK. Method and machine for producing, in particular by grinding, spur gear wheels with a profile correction of the tooth flanks which varies across the width of the tooth.

Patents Granted

968,655 F. M. ROSAZ, MICROREX SA. Bearing arrangement for the grinding and the control wheel on their respective shafts for centreless grinding machines.

968,642 W. HEILMANN, KURT KOERBER & CO KG. Tobacco cutting machine.

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195,369 GEBR BOEHLER & CO AG. Rock drill crown for percussion drilling.

195,654 METALLWERK PLANSEE GmbH. Sinter body of high strength and corrosion resistance containing zirconium di-boride, and method for its manufacture.

195,655 METALLWERK PLANSEE GmbH. Hard material of high resistance and method of making shaped bodies from this material.

195,668 J. AIGNER. Mount for indenters of hardness testers.

195,730 CARL ZEISS. Method and arrangement for working materials by means of rays carrying a charge.

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195,872 M. WESSEL. High efficiency boring crown.

196,270 W. O. LUGERTH. Tool grinding machine.

196,688 G. BERTOGLIO. Machine for drilling the points of ball pens.

197,172 GEBR BOEHLER & CO AG. Method of making tools for chip producing machining.

197,234 DIAMETAL AG. Profile grinding machine.

197,235 CONSOLIDATED DIAMOND TOOL CORP. Cutting disk and method for its manufacture.

THE BUREAU'S LOAN SERVICE

Recently the Industrial Diamond Information Bureau has been compelled to return a number of applications for copies of articles abstracted in this journal owing to insufficient details being given of the item required. The attention of all users of the Loan Service is drawn to the note appearing in each issue asking inquirers to supply adequate information.

We have also received several requests from the USA for copies of articles originally appearing in that country, which we were unable to fulfil since our Loan Service operates only in Great Britain. We advised the firms concerned to approach the magazines direct, a procedure which resulted in some loss of time.

It would be convenient not only for the bureau but for inquirers if these two points could be borne in mind.